

Remarks

Applicants thank the Examiner for examining the present application and finding that claims 17-22 contain allowable subject matter. With entry of this amendment, claims 1-25 will remain pending in the application.

This Amendment Addresses the Examiner's Objections to Claims 17-22 and 24

The Examiner objects to claims 17-22 and 24 on account of several minor informalities in claims 17, 20, and 24. (Office action at pg. 2.) Claims 17, 20, 24 have been amended to address the Examiner's objections. It is noted, however, that "fermenter" and "fermentor" are considered to be alternative spellings for the same subject matter.

Claims 1-16 and 23-25 Satisfy § 112, Second Paragraph

The Examiner rejects claims 1-16 and 23-25 as being indefinite under 35 U.S.C. § 112, second paragraph. (Office action at pg. 3.) The Examiner's rejections, discussed in turn below, are respectfully traversed.

Independent Claim 1

The Examiner suggests that independent claim 1 is indefinite because the claim fails to recite the methodology used to monitor a fermentation process and does not provide any guidance in how the detection of the ultrasound is used as a tool in monitoring a fermentation process. (Office action at pg. 3.) Applicants disagree.

Amended claim 1 expressly recites that the monitoring of the fermentation process is performed "by detecting ultrasound backscattered from the cells in the suspension or slurry," a clear indication of the methodology used to monitor the fermentation process. Furthermore, the claim as amended satisfies 35 U.S.C. § 112, second paragraph, and need not include any further detail.

The test for definiteness under 35 U.S.C. § 112, second paragraph is whether "those skilled in the art would understand what is claimed when the claim is read in light of the specification." (MPEP 2173.02 (quoting *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986)).) Moreover, "[i]f the scope of the subject matter embraced by

the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. § 112, second paragraph.” (MPEP 2173.4 (“Breadth Is Not Indefiniteness”).)

One of ordinary skill in the art would have no trouble understanding the boundaries of claim 1 as written. Indeed, the claim is clear, precise, and simple: “monitoring a fermentation process of a population of cells in a slurry or suspension by detecting ultrasound backscattered from the cells in the slurry or suspension.”

Accordingly, the § 112, second paragraph, rejection of claim 1 should be removed and such action is respectfully requested.

Dependent Claims 3 and 4

The Examiner suggests that the term “common” in dependent claims 3 and 4 is indefinite because it is a relative term undefined in the claim and specification. (Office action at pg. 3.) Applicants disagree, but are amending claims 3 and 4 in order to expedite prosecution of the present application. In view of the amendments to claims 3 and 4, the § 112, second paragraph, rejections of claims 3 and 4 should be removed and such action is respectfully requested.

Dependent Claims 2 and 5-11

Claims 2 and 5-11 are dependent from amended independent claim 1. Because dependent claims 2 and 5-11 are not separately rejected under 35 U.S.C. § 112, second paragraph, claims 2 and 5-11 should be allowable for at least the reasons stated above with respect to amended independent claim 1. Accordingly, the § 112, second paragraph, rejections of claims 2 and 5-11 should be removed and such action is respectfully requested.

Independent Claim 12

The Examiner further suggests that independent claim 12 is indefinite because the claim fails to recite the methodology used to monitor a fermentation process. (Office action at pg. 3.) Applicants disagree.

Independent claim 12 expressly recites the methodology used. Namely, claim 12 recites that fermentation is monitored “by detecting ultrasound backscattered from cells in a

fermentation broth as a function of time, wherein the detecting is with a transducer positioned inside the fermentor.”

Applicants further submit that independent claim 12 otherwise satisfies 35 U.S.C. § 112, second paragraph, and need not include any further detail. Indeed, one of ordinary skill in the art would have no trouble understanding the boundaries of the claim as written. Accordingly, the § 112, second paragraph, rejection of independent claim 12 should be removed and such action is respectfully requested. (*See* MPEP 2173.02 (“[T]he test for definiteness under 35 U.S.C. § 112, second paragraph is whether ‘those skilled in the art would understand what is claimed when the claim is read in light of the specification.’”); MPEP 2173.4 (“Breadth Is Not Indefiniteness”).)

Dependent Claims 13 through 16

Claims 13 through 16 are dependent from independent claim 12. Because dependent claims 13 through 16 are not separately rejected under 35 U.S.C. § 112, second paragraph, claims 13 through 16 should be allowable for at least the reasons stated above with respect to independent claim 12. Accordingly, the § 112, second paragraph, rejections of claims 3 through 16 should be removed and such action is respectfully requested.

Independent Claim 23

The Examiner further suggests that independent claim 23 is indefinite because the claim fails to recite the methodology used to determine cell growth. (Office action at pg. 3.) Applicants disagree.

Independent claim 23 expressly recites the methodology used. Namely, claim 23 recites that cell growth is determined during fermentation “by monitoring ultrasound backscattered from the cells as a function of time.”

Applicants further submit that claim 23 otherwise satisfies 35 U.S.C. § 112, second paragraph, and need not include any further detail. Indeed, one of ordinary skill in the art would have no trouble understanding the boundaries of the claim as written. Accordingly, the § 112, second paragraph, rejection of claim 23 should be removed and such action is respectfully requested. (*See* MPEP 2173.02 (“[T]he test for definiteness under 35 U.S.C. § 112, second paragraph is whether ‘those skilled in the art would understand what is claimed when the claim is read in light of the specification.’”); MPEP 2173.4 (“Breadth Is Not Indefiniteness”).)

Dependent Claim 24

Claim 24 is dependent from independent claim 23. Because claim 24 is not separately rejected under 35 U.S.C. § 112, second paragraph, claim 24 should be allowable for at least the reasons stated above with respect to independent claim 23. Accordingly, the § 112, second paragraph, rejection of claim 24 should be removed and such action is respectfully requested.

Independent Claim 25

The Examiner further suggests that claim 25 is indefinite because the claim fails to recite the methodology used to monitor cell size and number per volume. (Office action at pg. 3.) Applicants disagree.

Independent claim 25 expressly recites the methodology used. Namely, claim 25 recites that cell size and number per volume is monitored during fermentation “by monitoring ultrasound backscattered from the cells as a function of time.”

Applicants further submit that claim 25 otherwise satisfies 35 U.S.C. § 112, second paragraph, and need not include any further detail. Indeed, one of ordinary skill in the art would have no trouble understanding the boundaries of the claim as written. Accordingly, the § 112, second paragraph, rejection of claim 25 should be removed and such action is respectfully requested. (See MPEP 2173.02 (“[T]he test for definiteness under 35 U.S.C. § 112, second paragraph is whether ‘those skilled in the art would understand what is claimed when the claim is read in light of the specification.’”); MPEP 2173.4 (“Breadth Is Not Indefiniteness”).)

Atzinger Does Not Teach Each and Every Element of Amended Claim 1 or Claim 8

The Examiner rejects claims 1 and 8 as being anticipated under 35 U.S.C. § 102(b) by U.S. Patent No. 6,397,734 (“*Atzinger*”). (Office action at pg. 4.) The Examiner’s rejections are respectfully traversed.

Atzinger describes a device for detecting the raising state of lumps of dough in a proofing chamber as may be used during the production of table rolls. (*Atzinger*, col. 1, lines 5-10; col. 4, lines 27-33.) As explained in the background section of *Atzinger*, before the rolls are baked in an oven, the lumps of dough are subjected to a “rising step in a proofing chamber, in which the size and dough consistency required for the baking of the rolls is strived for.” (*Id.* at col. 1, lines 22-

27.) The proofing process “is set in motion [in the proofing chamber] by the elevation of the temperature.” (*Id.* at col. 1, lines 34-35.)

As seen in FIG. 1 of *Atzinger*, the proofing chamber 13 is located in a proofing cabinet 10, which is “provided with a hot air convection heating device (not shown), by means of which the temperature produced in the proofing chamber 13 is adjustable.” (*Id.* at col. 4, lines 55-58.) Further, within the proofing chamber 13, “the dough lumps 11 rest on proofing sheets 12, which are easily slideable in the sideways guide rails 14.” (*Id.* at col. 4, lines 40-44.) A distance sensor 21 mounted on a carrying framework 17 is positioned over one of the dough lumps and determines the vertical thickness in the central area of the selected dough lump. (*Id.* at col. 4, lines 62-67; col 5, line 1, 9-14.) The distance sensor 21 therefore determines the vertical thickness of the selected dough lump as it rests on the proofing sheet in the proofing chamber.

By contrast, amended claim 1 recites monitoring a fermentation process of “a population of cells in a suspension or slurry.” Dough lumps in a proofing chamber of hot air are not “a population of cells in a suspension or slurry.” Indeed, because the proofing chamber provides an environment of air and because the dough lumps of *Atzinger* rest on proofing sheets supported by the proofing cabinet, the dough lumps of *Atzinger* cannot be “a population of cells in a suspension or slurry.”

For at least these reasons, *Atzinger* does not implicitly or expressly teach each and every element of independent claim 1 as required by 35 U.S.C. § 102(b). Accordingly, the Examiner’s § 102(b) rejection of independent claim 1 should be removed and such action is respectfully requested. (*See* MPEP 2131 (“To anticipate a claim, the reference must teach every element of the claim.”).)

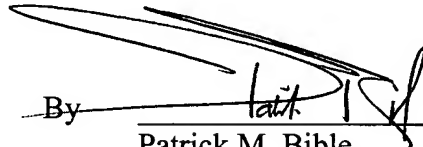
Claim 8 is dependent from independent claim 1 and is therefore allowable for at least the reasons stated above. Further, dependent claim 8 is independently patentable because of the unique and nonobvious combination of features that is set forth in the claim. Accordingly, the § 102(b) rejection of dependent claim 8 should also be removed and such action is respectfully requested.

Conclusion

For the reasons stated above, it is believed that the application is in condition for allowance, and such action is respectfully requested. If any further issues remain concerning this application, the Examiner is invited to call the undersigned to discuss such matters.

Respectfully submitted,

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